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Teaching On-line: two tales of telecommuting academics

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Abstract

This paper presents two case studies dealing with on-line education. One is an MBA course, the other a final year undergraduate course. In both cases a combination of email and a virtual classroom (WebBoard and WebCT) were used. The findings come from in-depth views of and discussion by, the students of their learning experience. The paper also provides some thoughts on the academic workload in running such a course. While the case studies add support to the general findings in the literature, the contribution of the paper is in providing insights into the students' perceptions of their learning experiences – why do they feel the way they do about such courses? What factors contribute to satisfaction with such course and why?

Keywords

Online education, e-Learning

INTRODUCTION

Around the world, the professoriate is aging – the so-called "the greying of academia" (Crozier, 2001; Thompson, 1999; Jenkinson, 1996). In the US, UK, Australia and Canada there will soon be many retirements – at a time when college enrolments will have to grow to deal with the 'baby boomlet' (children of baby boomers currently approaching college age). To exacerbate matters, supply shortages in the information intensive fields are likely to be chronic in the professoriate because of the pace of change and the financial rewards available in industry for qualified individuals. With this we see a growth in on-line distance education – as an example, the University of Phoenix (an on-line, for-profit university) has become one of the largest markets for business textbook publishers, demonstrating its rapid growth in this field. Not surprisingly, there is growing and potentially intense interest in alternative course staffing and delivery models among American academic administrators. Will the Internet provide a viable answer? Can the academic be a telecommuter – even from the other side of the world?

With Internet technology, Universities are facing a future that allows education to be delivered without geographic boundaries or without any physical limitation on class sizes. It is an important opportunity as it promises both unlimited market expansion, hand in hand, with significant supposed cost reductions. The technology also offers students and academics a significant promise and advantage: to be able to undertake their studies or deliver instruction from the comfort of their own home, office, or hotel and in virtually any spot on the globe. However, on the other side of the equation, on-line technology allows an unlimited number of competitors (other universities and other education providers) into the local market.

There is important research here too, now moving into the mainstream professional literature, particularly the IS literature (Alavi. and Leidner, 2001; Picolli, Ahmad and Ives, 2001). The acceptance of such articles by leading journals is indicative of the serious view of the research within the IS discipline. It is possible that the IS interest and focus results from the acceptance of research into the use of the technology, or from the expectation that the

computer communications technology involved presents less of a barrier to IS students and therefore is closer to the everyday activities of IS academics, or both.

Yet our cumulative knowledge of on-line education, especially within the IS context, is weak. The purpose of this paper is to provide some information about IS on-line education. In particular, the paper details the experiences of two academics teaching via the web – one teaching an MBA class (and another similar class face-to-face during the same semester), and the other teaching a final year undergraduate class. In both cases, the students met face-to-face with the professor only once (in the undergraduate class) and twice (in the MBA class).

BACKGROUND

Internet delivery of education is the latest technique in the long history of distance education. There is a considerable body of literature discussing potential differences in performance of students undertaking distance education courses as compared to traditional classroom courses (Neal, 1998; Taylor, 1998; Wetzel, Radke and Stern 1994; Storck and Sproull, 1995; Hara and Kling, 1999). In general these studies indicate that there are no significant differences in achievement and the satisfaction of students in distance education classes, when compared to the more traditional modes of delivery. However, finding empirically based research specifically related to on-line distance education is difficult, no doubt partly due to the recent nature of such delivery.

Nevertheless, a number of studies do provide some indication of student perceptions of on-line distance education (Hiltz, 1997; Hornby and Anderson, 1995; Hara and Kling, 1999; Pear and Novak, 1996; Sloane, 1997; Spooner *et. al.*, 1999; Stahlman, 1996). In general the benefits identified by students include:

- Convenience and flexibility
- Greater motivation to work
- Learnt more and greater understanding of the course material
- Higher quality of education
- Better access to and communication with the professor
- More communication with other students
- More active participation in discussion
- Liked the unlimited access to self-assessment and immediate and extensive feedback.

Against this, the following problems were identified (note the overlap, different studies reported different findings):

- High level of frustration and dissatisfaction
- Lower levels of satisfaction
- One third of students expressing dissatisfaction
- Technical and logistical problems
- Lack of interaction with the professor
- Developing student friendships was more difficult
- More likely to stop 'attending' and fall behind
- Lack of feedback and confusion about what was required
- Overwhelming amounts of reading from email and on-line discussion
- Less interesting
- Less likely to ask questions.

From the academic's point of view, the following issues are frequently raised in the above literature (see for example, Hara and Kling, 1999; Taylor, 1999; Ward and Newlands, 1998; Hiltz, 1997):

- The suitability (or lack of it) of all courses to on-line distance education
- The time taken to prepare and maintain such courses

- The difficulty in motivating some students
- Greater demand from students in on-line classes
- Intellectual property concerns
- A conflict between the administration insistence that such courses be provided cheaply and the expectation that they will be of high quality

A key problem in undertaking research in this field is that when an instructor develops an Internet course, a number of the teaching methods usually need to be changed to suit the on-line delivery. So not only is the delivery method changing, the teaching method is also changing, making it difficult to determine whether the resultant impacts are due to the teaching or the delivery method.

As noted above, there are a number of studies that have surveyed student opinion on the effects on them of Internet courses. The studies provided mixed results with little agreement on the impact of Internet courses on students. Most of the studies have used closed question, written questionnaires. There are virtually no studies that have sought in-depth information from students, where students are not only asked their opinion on different aspects of on-line learning but why they hold those views. The first of the two case studies reported here seeks such in-depth views of the students on the impact of Internet delivery on their learning experience. It also compares the grades of the students with those in a similar class given by the same instructor to determine whether there are differences in performance. The second case study draws on information obtained from surveys and a discussion forum used to evaluate the course. It also provides some indication of the instructor's workload associated with running the course.

RESEARCH METHODOLOGY

The survey designed for the study of the MBA students was constructed from the above literature with the objectives of determining the views of students on on-line learning and seeking further information in relation to those views. The study also compares the grades of two classes of students in an attempt to identify if there are any differences in the performance of the two classes. The survey was undertaken at the end of the Spring 1999 semester when the students had completed all the requirements, assignments and exams, for this course. Students from both the Internet and traditional class were included in the survey. In order to obtain detailed, in-depth responses to the survey questions, telephone interviews were chosen as the primary surveying tool. The interviewer started by asking 26 questions associated with the students' learning experience but typically expanded to ask numerous follow-up questions in order to obtain considered and in-depth responses.

There were 77 students in the class; telephone interviews, ranging from 30 to 45 minutes, were held with 33 students during May and June 1999. An email version of the survey was sent to all students who did not respond to the telephone survey in an effort to gain as many views as possible. In addition to the 33 telephone interviews, 18 email questionnaires were completed and returned. Overall, this comprised a total of 51 student responses out of a combined class number of 77: a response rate of 66%. The results include 28 interviews from the Internet class of 40 students (70% response rate) and 23 interviews from the traditional class of 37 students (62% response rate). The information from the raw survey information was analysed on a question-by-question basis. For each of the 26 questions, the information from the traditional and Internet classes (telephone and email versions) was combined and compared.

For the undergraduate class of 38 students, each week the students contributed to a 'discussion board' on a particular topic for that week. In the penultimate week of the course, the topic for discussion, posted by the instructor was "I wish I had not taken this on-line course and had enrolled in a traditional face-to-face one" Agree or disagree? Why?" 34 students made a contribution to this topic, most of around 100 – 200 words. The students could see earlier contributions made by their colleagues and some contributions built on the earlier comments. In addition, in accordance with normal practice, the students were requested to complete course evaluation surveys which specifically measured student perceptions of learning associated with the course – these surveys also included several open-ended questions inviting feedback on the course. Analysis of the discussion board

comments was by reviewing all 34 comments and grouping them into major themes. These were then compared with the responses to the open-ended questions asked in the course evaluations, which were provided anonymously. Several students took the opportunity to comment 'off-line' to the professor – where relevant, these comments have been included in the analysis. All students were guaranteed anonymity (and no penalties for any criticism) for any comments made in discussion or chat sessions during the course, even though the software recorded the identity of the student.

FINDINGS

The MBA course

The data reported here relates to an MBA core course entitled 'Introduction to Information Systems' given at Business School at a University in the US. The course is compulsory for all MBA students and approximately 180 take the course each semester. This class was run using email and WebBoard. An interesting aspect of this course was that only about half of the students knew that they were enrolling in an Internet class, the other half thought they were enrolling in a traditional class. Most of the 50% who knew, enrolled specifically *because* it was in Internet class. The students attended one face-to-face lecture given by the professor around the middle of the course, and an introductory session the first day of class.

The key advantage of the Internet to students in the Internet class was convenience and flexibility. These reasons comprised 76% of all the advantages listed by the students. The reasons given related to saving time (by not having to attend class) and schedule flexibility (being able to fit their study program into their busy work, home, or study schedule). The convenience provided by the Internet format was particularly attractive to full time workers, students attempting high loads and a smaller group of parents.

One issue that arose relates to the volume of information. With email access a professor is now seen as available 24 hours a day. Students are seeing Internet classes as an individualistic enterprise, something they can do at home alone. This attitude extends to the relationship with the professor – a more individual rather than class (group) relationship. Many students said that they did not read WebBoard prior to sending an email. As a consequence the professor received the same question from many students requiring multiple responses, whereas in class there would be one reply to the whole class. The volume of student to professor interaction may become much higher than in a traditional class and difficult for a professor to handle.

A critical finding from the responses to the survey is that 74% of students in the Internet class believe that they 'missed out' educationally because they took an Internet class. Clearly the Internet delivers convenience and flexibility but the students believe that they are receiving a lower level of education.

The trade-off between convenience and educational value is a difficult one for students. As said by one student:

> *Overall, the internet is great if the objective is to get education to a greater number of people, especially ones like me who can not get into campus. But a level playing field, it is not possible. It is a huge disadvantage (educationally) to take the class on the Internet but it also gives a huge personal benefit (in convenience).*

Interestingly, the grades the students received do not reflect the views of the 74% of Internet students who considered that they received a lower level of education. In fact the results from the two classes are virtually the same. The average final grade in both classes was 74%. So the key question arising from this study, is what is 'the educational value' that the students perceive that they have missed out on by taking an Internet class? We know that whatever this value is, it is not reflected in their grades.

The survey information provides some insights here. As people learn from a range of methods (reading hearing, doing) and as there were some constraints on the availability of these for the on-line class, perhaps a lesser experience was perceived. Most students believed that there was less course content in the Internet class – in this case the professor

was not able to transmit the same level and depth of information on-line as he did in a classroom. The value added by the professor (in this case a professor with a great deal of experience and a high reputation in the academic community) was an issue too. The students in this survey based their views on having attended one lecture given by the professor, which provided them a point of comparison to the rest of the course that they were doing on line. They said that they learnt a lot more about the particular topic covered in this lecture than they did on any other topic they covered that semester on the Internet:

> *I gained nothing except from the [particular] lecture, which was very interesting. He was very interesting, a good professor who speaks well. None of this came across on the Internet*.

Another area of disparity was that of questions and discussion. The discussions in this class were among small groups of students and were not moderated by the professor. The students clearly desired a moderator and would have liked it to be the professor as this would be a way of increasing the depth of the discussion and obtaining the professor's views. A moderator would perhaps overcome some of the problems, although some students had had experience with moderated discussion and were still concerned with the depth of the conversation. The WebBoard discussion did not seem to generate the same number of ideas, interesting and controversial points that arise in the classroom. The Internet conversations appear bland in comparison and not as natural. Finally group work caused problems for the Internet class. Many students believed that they would not have group work (a large element of this course) – perhaps due to a cultural change in expectations that Internet classes were largely to facilitate convenience and working from home. The Internet class had a significantly higher incidence of poorly functioning groups. It may be that some of this disfunctionality was caused by the belief that there would be no group work, however the students believed the problems related to the group not seeing each other in class so it is harder to get affinity, group members being less responsible because they did not meet, problems occurred and could not be resolved as they were not meeting and the group not focused and coordination can be difficult on email, if group members do not respond promptly.

In answer to the question raised above about the missing educational experience, it seems that what is lost is an interesting, richer, learning experience. The learning experience in a classroom is more satisfying than the experience of sitting alone at a computer reading material and responding on-line. Learning in a classroom is easier – many said that they had to read more because they were doing the work without lectures. Learning in the classroom has more elements – the lecture, the questions, the discussion, the auditory, the visual, the social etc – and hence is a richer experience. Also, some of the elements provided in a classroom by a professor – humour, stories and perspectives all aid long term recall. What will a student recall in a management situation in 5 years time – an idea discussed in an entertaining or strong manner by a professor or a piece of information read in a textbook?

Whatever view is taken of on-line teaching, an overriding point remains from this survey – a significant percentage of the students (the customer base) consider that the quality of education in internet classes is not as high as in traditional classes. Even so, they will continue to choose Internet courses for at least some of their classes due to the flexibility and convenience.

The Undergraduate class

The data reported here relates to on-line distance students undertaking a senior level Information Technology Management course for non-IS majors in a Business School at a University in the southern United States. The course is compulsory for Business School non-IS majors and some 200 take the course each semester. The on-line class had 38 participants, of whom only one had had any prior experience of distance education. On-line distance education was not part of the regular delivery methods employed at that University, although most students were aware that this course would be run as a trial distance education class before it commenced. They were offered an opportunity to change to a traditional class if they felt uncomfortable with the on-line experiment – none did so, in fact others asked to join. The course was run by email and the use of WebCT. The source for

much of the material presented below comes from the student discussion (initiated by the professor) on WebCT.

Similar comments emerged from the 'discussion board' to those provided in the all forms of communication by the students – course evaluations, 'off-line' comments to the professor, and chat sessions.

There was substantial agreement among the students that convenience and flexibility were the primary reasons for seeing this course as desirable. Many students felt it allowed them to take on an extra course in order to be able to graduate at the end of the semester, which they would not have been able to do if they had had to attend classes. Others felt it allowed them to continue or finish their study notwithstanding work and family commitments. Coupled with this was a feeling (these were non-IS majors) that the class forced them to gain experience in the technology. The following comment encapsulates much of what was said by many students:

> *I believe the manner in which this class was taught had many advantages. There was convenience for the students (and hopefully the professor), by avoiding the traditional classroom setting where lectures and notes can become redundant and boring. The on-line version of the class offers students access to the classroom from wherever they can access a computer. They can do their assignments all in their own time and learning and interacting is still there thanks to the assignments and weekly discussions. I don't agree that all classes should be taught in this manner, yet an occasional on-line class is something I believe every student should experience.*

Many of the students were enthusiastic, partly because it was experimental and they were keen to be part of it for that reason:

> *This course has become legendary here, everyone knows about it and is aware of its existence. I'm glad I've taken it because it has taught me responsibility….*

As suggested in that last quote, the major problem with the class as seen by the students related to the necessary time management skills.

> *I think the class is great, I just need to work on my time management skills.*

And:

> *Seeing how I lack in time management it has been a bit hard for me to keep up, however I am glad that I took it. It has taught me a lot and will prove to be beneficial to me.*

Other sources of concern were technical issues and a desire to interact more closely with the professor.

In terms of learning outcomes, there were a number of relevant factors in the department evaluations – these invited the student to compare the course to other similar courses that they had taken. The results of these evaluations are given in Figure 1 but in general terms it seems that for most students the learning outcomes were about the same as for other courses, with the qualification that around 30% of students felt that they learnt more, it was more intellectually challenging and that it was more difficult. Against this, a small percentage (around 5%) felt that they learnt less, were less challenged and that it was less difficult.

The results shown below (Figure 1) were compared with the results obtained from students doing other sections of the same course. No significant differences were noted, indicating that the students at least considered the learning outcomes to be the same, regardless of whether they took the on-line class or the traditional classes.

It seems reasonable to state that a significant factor in the perceived success of the class relates to the effort put in by the professor (many students commented to this effect). This involved, over the course of the semester:

- A visit to the School, and taking one face-to-face class. The primary purposes of this class were to explain how the rest of the semester would unfold, to stress the required time management skills and to leave with the students a feeling that the professor was very approachable and they should not hesitate to do so should any such need arise
- Assignment of weekly readings – normally a textbook chapter
- Preparation of a weekly PowerPoint presentation highlighting the key issues in the reading
- Preparation of study notes for each week – normally a page or so stressing the important issues and often providing anecdotes to illustrate the points under consideration
- Preparation of a weekly audio file – a mini lecture, similar in content to the study notes
- Preparation of a weekly multiple choice quiz, (adapted from a test bank supplied by the textbook author) – the objective of the quiz was to force the students into the textbook
- Setting an assignment topic for each week (a one page deliverable, mostly based on a case study)
- Posting a discussion topic for each week, related to the chapter reading
- Running a 'chat' session for 1¼ hours each week
- Setting two on-line quizzes and one final examination, all run on WebCT
- Grading each week's assignment, commenting on the weekly discussion contributions and marking the 'short answer' examination questions
- Monitoring student progress and contributions.

The above tasks required over 1200 email messages and over 1000 WebCT messages. It occupied on average, about 1½ - 2 days of the professor's time each week. This is a substantial workload for a 3-hour class. At the conclusion of the course, the professor suggested that changes for next time would include setting up study groups so that students could turn to each other for help, more assistance to the students to ensure they can deal with the technology and stressing the time management skills even more strongly.

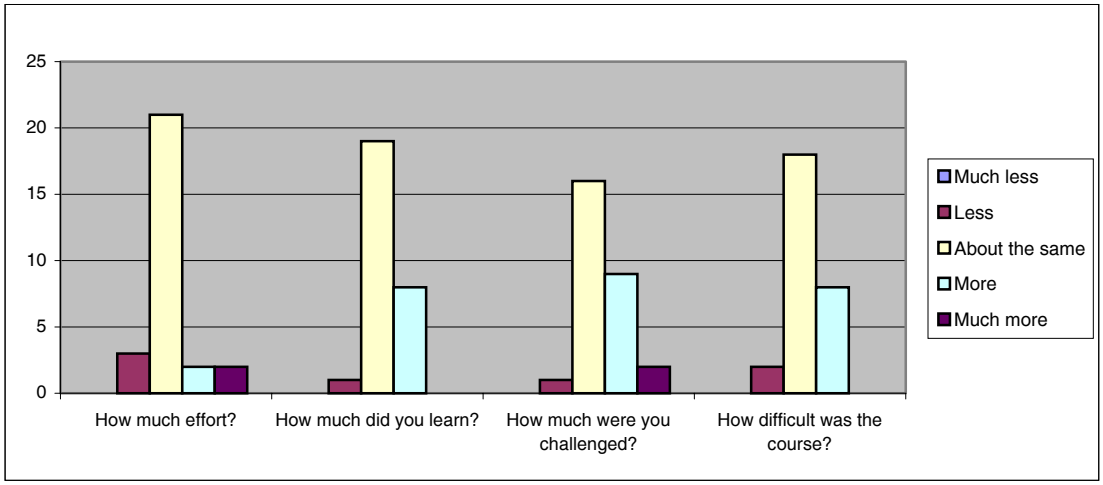

Figure 1: Learning outcomes

CONCLUSIONS

These were two very different courses – one was run for MBA students, experienced in the use of technology and with substantial work and family commitments, the other for undergraduate non IS-majors, most of whom lived at, or very near, the University. Their extra-curricular commitments revolved around sport, casual (and in a few cases, full-time) work, and in a small number of cases, parental responsibilities. The course was seen as

attractive because it enabled them to take an extra class in a different way and work on it from home. Nevertheless, some common threads emerge.

- The convenience and flexibility benefits came through strongly in both cases
- Participants in both courses missed the close interaction with the professor – the MBA students in particular felt that this contributed to a lesser learning experience
- There is general support for many of the issues mentioned in the literature – convenience and flexibility, some students learn more, some less, a perception there was good access to and communication with the professor, and active participation in discussion (although perhaps somewhat more restrained than in the classroom), the potential for frustration, technical problems, falling behind, and a great deal of reading.
- For the instructor, time taken, motivation of students and the increased workload underlined the literature suggestions.

Other general points are evident from these case studies. While on-line distance education will continue to be attractive to many students for at least some of their classes, opportunities exist for a number of multi-media options to be added to the Internet courses which may start to replace some of the visual and auditory elements that are lost with the move from traditional, face-to-face teaching. These may go some way towards improving the perceived learning experience. Associated with this is the general practice of teaching on-line classes in a similar way to traditional classes. Professors need new methods for transferring content when working on-line.

It is believed that the students' perception that the professor was 'warm and friendly' and approachable was a significant factor in the success of the undergraduate class. This suggests that a face-to-face meeting with the professor at the beginning of the course is highly desirable – it is important that students do not fall behind due to their reluctance to contact the professor and outline their problems.

There is another issue too, worthy of consideration. For those in academia, who have an outstanding reputation, it may well be that this reputation and expertise in both content and delivery do not come through as well in an Internet class as they would in a traditional class. While on the face of it, this may indicate that an Internet class does not allow them to contribute to their full potential as educators, it may mean that they do not yet have that wealth of experience and strategy, that they can draw on in the classroom, in place for on-line teaching. This will come with time as the academic community becomes more familiar with on-line delivery and the technology allows a closer resemblance to the classroom; a series of best practice models will emerge.

These two experiences suggest that management may well be able to consider the delivery of education on-line as an acceptable alternative to the traditional classroom based approach with the instructor present, for at least some courses, some of the time. However it seems that the instructors will need to be carefully chosen and will have to undertake an extensive workload. The 'freedom' afforded to instructors teaching in this way may well be attractive to some, but the increased workload and the desirability of retaining and using a high quality academic staff will no doubt eventually be reflected in the cost of running such courses. This general issue of the academic as a telecommuter is one on which further research is needed – while there are initial attractions to the institution of saving office space, a wider pool of potential staff on which to draw, and potential productivity gains there are possible disadvantages too – increasing management overhead, extra work for the academics in the traditional workplace and changes to established practices.

Given our experience with these two internet teaching case studies, we wish to conclude with the following reflective question: Having redesigned these courses to suit internet delivery, what should new Internet courses look like? Certain traditional elements appear to be difficult to create in an on-line environment. If courses are redesigned around what works on the Internet will the long-term effect be a movement towards more choice or a standardized product? The world is increasingly using one word processing package and one version of English grammar as defined by Microsoft, so will we be moving to one standard format for an undergraduate or post-graduate course? The Internet is lauded for its

open access and infinite variety but when it is combined with education, will the result be more choice or less choice?

Students will no doubt have access to a greater choice of subject offerings from a greater variety of universities. And the medium could provide opportunities to tailor courses based on competencies of individuals or particular groups of students. But an alternative scenario is that open semi-structured courses may no longer exist, ones where students need to access a range of resources or leave their computer to analyse real world situations. If universities follow student demand, courses may have to be focused on individual work, few or no group projects, all resources available on-line, and tightly structured around textbooks and limited materials. The result could be a more standard product suitable for delivery to a mass market. If these trends become reality, it would appear that the medium, not educational goals, may be determining the content and format of education. As educators, we might be tempted to ask: "is this the world we want to create?"

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